# AF WINDOWS 2000
# Status


**Presented by:**
**Mr. John Hemminger, Lockheed Martin**
**COMM: (334)416-3205 DSN: 596-3205**
**John.Hemminger@gunter.af.mil**

**Feb 2000**

# AF Windows 2000 Overview

- Win2K Background
- Domain Name System (DNS)
- Exchange 2000/DMS
- Test Architecture
- AF Topology Options
- Challenges
- AF Windows 2000 JDP Results

# Overview

- Win2K is due for public release on 17 Feb 00
- Effort underway to develop comprehensive AF Win2K architecture
- Goal is to develop standards for VPN, firewall, directory, domains, operations, and policy

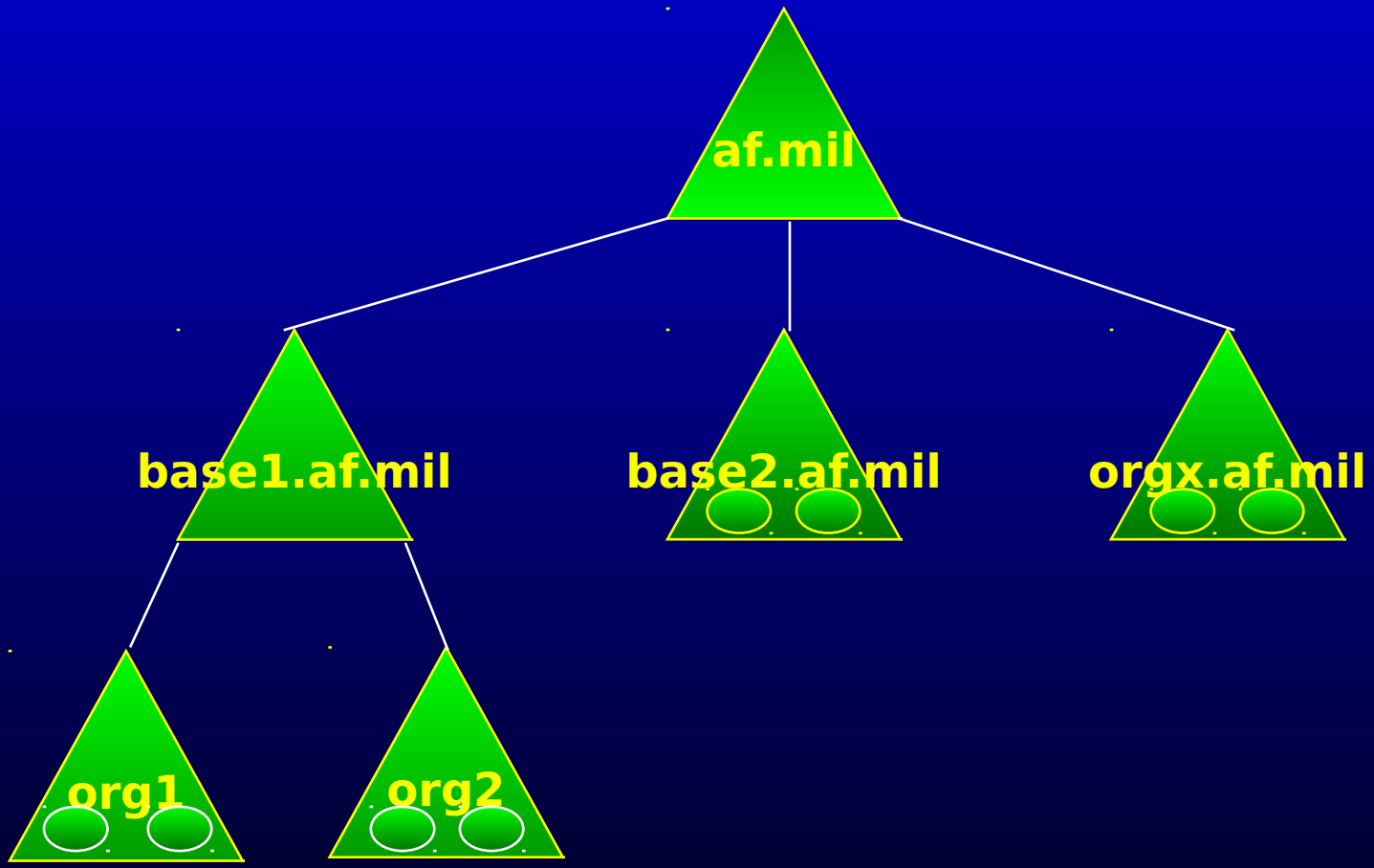
# NT 4.0 Background

- Win NT 4.0 widely implemented across AF
- No AF coordinated effort to consider AF security, policy, and operations during deployment
- Multiple independent domains at org/base level
- NT 4.0 has limitations
  - Granularity of administration (all or nothing)
  - Security
  - Reliability, availability, scalability
  - Trust relationships

# AF WIN2K Planning Decisions

- Domain and tree structure
- Domain Naming System (DNS) design
- Replication
- Security and firewall configurations
- Migration strategy
- Training
- Standards for
  - Naming
  - Group policy
  - Administration procedures
- Exchange 2000 implementation

# Active Directory AF Architecture Example



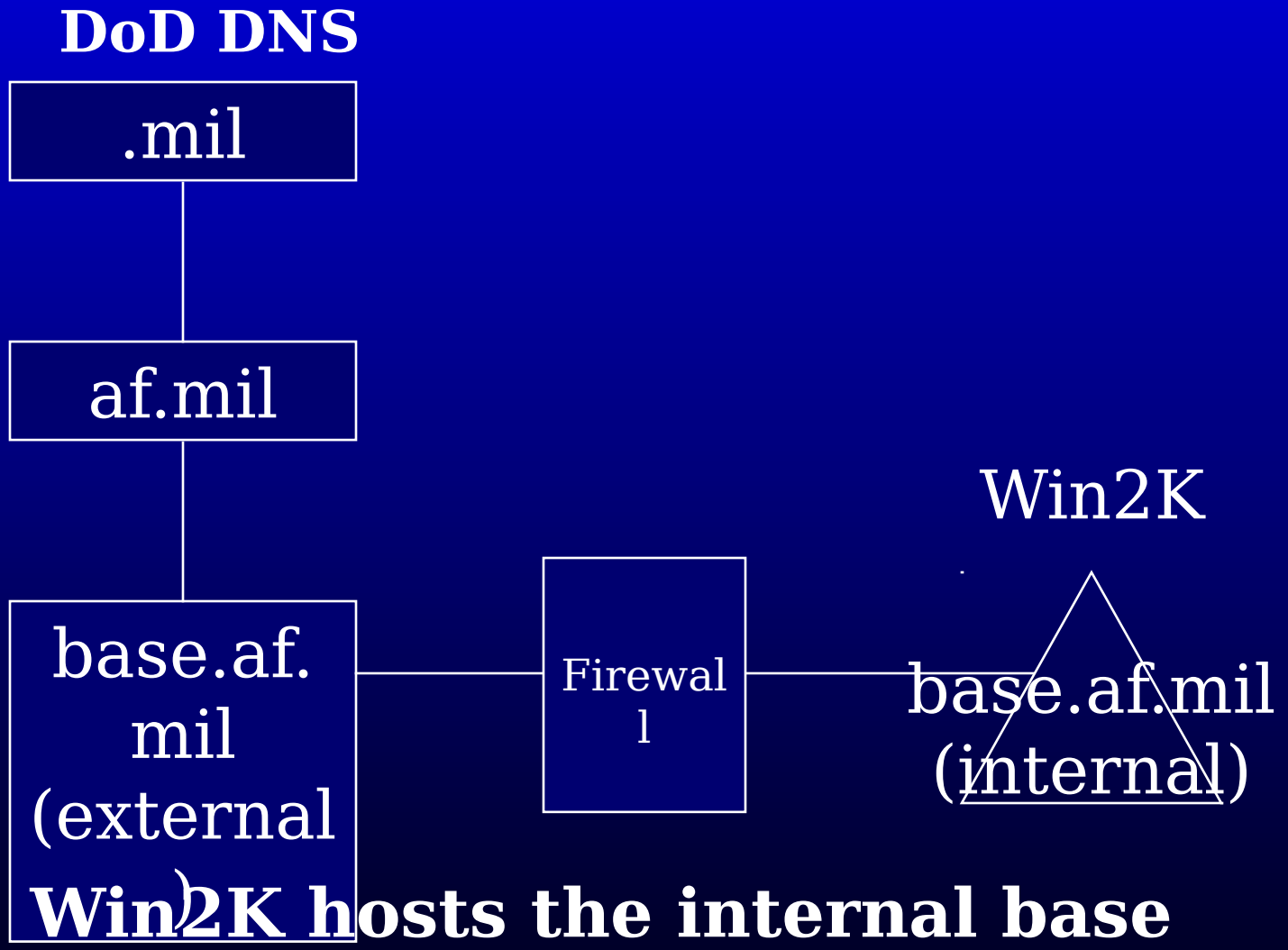
# Active Directory Architecture Design Considerations

- The forest has a common directory schema
- Top-down design is necessary
- Grafting and pruning of trees/forests difficult
- Win2K facilitates use of fewer domains
- A transitive trust is established across the forest
- Joining domains only allows the ability to assign permissions

# Domain Name Service (DNS)

- **Win2K uses DNS as Active Directory locator**
  - **Clients find Domain Controller by DNS query**
- **Can use Win2K DNS or non-Win2K DNS**
- **Non-Win2K DNS must support Bind ver 8.21 or higher**
  - **Support for SRV records (mandatory)**
  - **Dynamic DNS (optional but highly**

# Potential Domain Name Service (DNS) Architecture - Near Term




**Win2K hosts the internal base DNS**

# Reason to use Win2K for internal base DNS

- No reliance on separate system
- Very easy to use and manage
- Win2K DNS supports secure DDNS

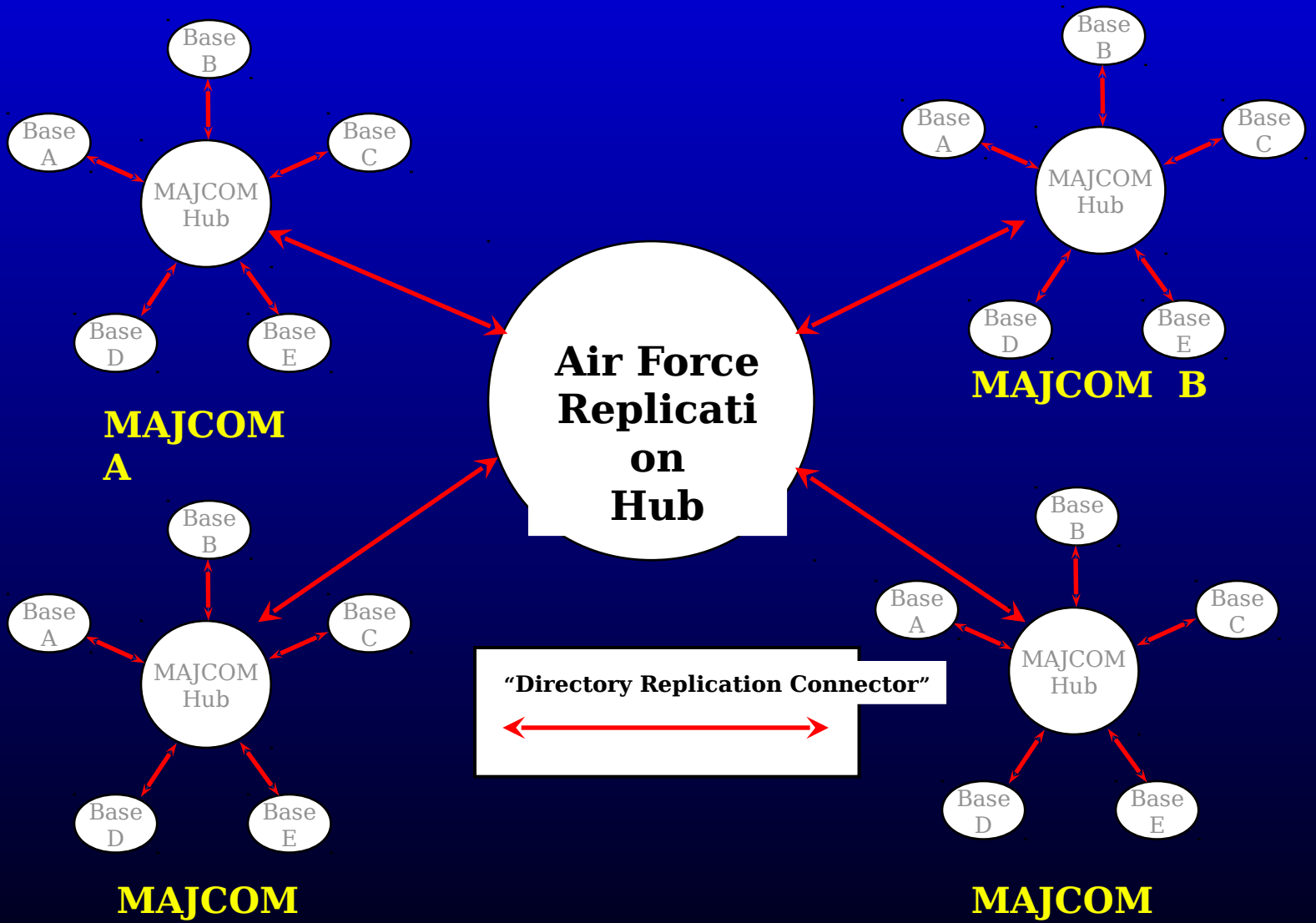
# Exchange 2000

- Window 2000 incorporates Active Directory as a complete directory service
- Next version of Exchange (Exchange 2000) uses Active Directory for directory services
- Active Directory Connector provides migration to use of Active Directory
- Exchange admin is performed through the MMC
  - Exchange admin of Exchange 5.5 site

# Exchange 2000

- Exchange 2000 will automatically create the needed object classes and attributes
  - — Done once in a forest;  needs Enterprise Admin
- AF Directory Replication will change over to Active Directory
- The boundary of replication in Active Directory is the forest

# AF Wide Exchange Replication



# Exchange 2000 and DMS

- DMS 2.2 client can be loaded on Windows 2000 Professional as a non-core product
- DMS 3.0 (late 2000) will be Exchange 5.5 on NT4.0 and Win2K (non-Active Directory)
- DMS 3.1 (summer 2001) will be based on Windows 2000 (Active Directory) and Exchange 2000
- Exchange 2000 may not be used in the AF until DMS 3.1 is approved for

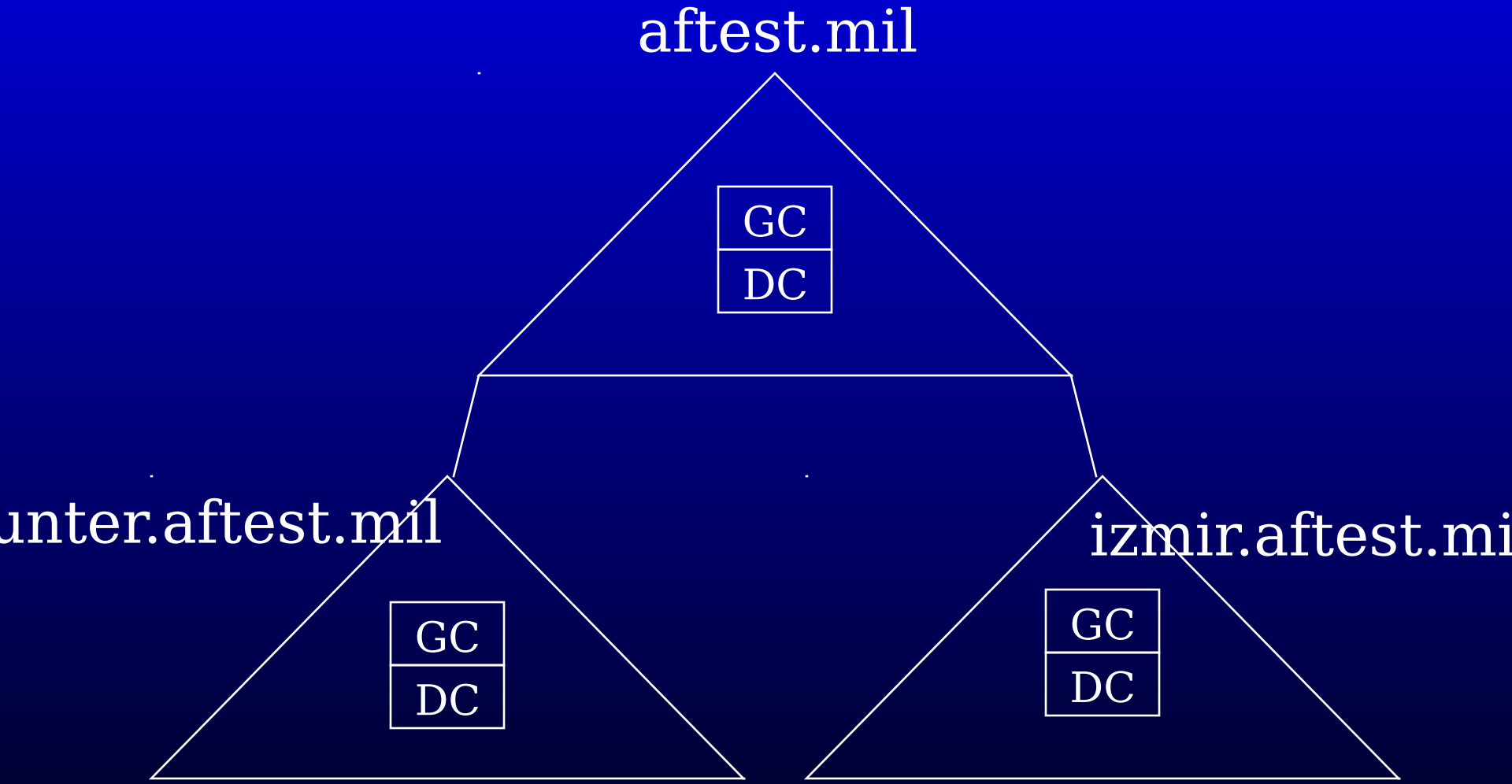
# AF Win2K Technical Advisory Group

- SSG (Lead)
- Microsoft Consulting Services
- DMS-AF Program Office
- AF Network Operations Center (AFNOC)
- AFIWC
- AFCA

# AF WIN2K Domain Testing Objectives

- Build internal expertise
- Test interoperability with AF systems
- Determine firewall/security requirements
- Recommend group policies
- Evaluate use of Win2K Domain Name Service (DNS)
- Establish remote monitoring system

# AF Win2K Domain Testing Architecture



# AF Win2K Test Environment Test Results

- Domain structure (tree, forest) security
  - Able to use IPSec to protect inter-system traffic
  - However, Kerberos passed outside the tunnel
  - Microsoft working on fix
- Domain Replication
  - WAN replication to Izmir worked well
  - Able to join domains and maintain a off-site DC for aftest.mil
- DNS Structure
  - BIND ver 8.21 worked
  - Earlier versions need to be updated

# AF Win2K Architecture Options

- 1 – Separate standalone base domain/forest
- 2 – Two-level geographic (single AF forest, domains determined by geography)
- 3 – Multi-level organizational
- 4 – World-wide single domain
- 5 – Three level geographic with organizations on level 2, bases on level 3
- 6 – Organizational with organizational units (OUs)
- 7 – Multiple forests with theaters at

# Evaluation Criteria – How did we Narrow the Options?

- Would it be Secure?
- Could the Network Support the Traffic?
- Would it be Manageable?
- Was it Compatible with the AF Organization?
- Could it provide an AF Wide Common Directory
- Was it Restructure Safe?
- Was it Compatible with Existing


09/14/16

# Architecture Recommended by AF TAG - Option 1 with a Plan to Move to Option 2 When Security Permits

- Separate Single Base Domain/Forest to gain the security, reliability, and manageability of Windows 2000
- Use VIA (Zoomit) synchronization provide AF Wide E-Mail Directory
- Consolidation into an Air Force wide tree when read only configuration and schema replicas are possible

09/14/16

# AF Win2K Architecture Document

- Similar in format to AF E-mail Design Document
- Contents:
  - Recommended architecture
  - Migration from NT 4.0
  - Security
  - Management structure
  - Implementation guidance
  - Client configuration
  - Server configuration
  - System evolution

# AF Win2K Schedule

- 17 Feb 00 – OK to use Win2K Professional
- 1 Apr 00 – OK to use Win2K Member Server
- 1 Aug 00 – AF Win2K Architecture Document due
- 1 Oct 00 – OK to implement Active Directory
- Summer 2001 – OK to implement DMS 3.1 & Exchange 2000

# AF Challenges

- **Directory Integration**
  - **DMS, DoD PKI, others**
- **Integration of Advanced Security**
  - **Digital signature, encrypted messaging, SSL sessions, authentication/smart cards, VPNs**
- **Firewall Integration**
- **Inclusion of MAJCOM NOSCs into structure**
- **Funding**
- **Central Program Office**

# Windows 2000 Joint Deployment Program (JDP)

- Background
- Hardware
- Applications
- Windows 2000 Professional Rollout
- Lessons Learned

# Windows 2000 JDP Background

- Designed to Promote Direct Interaction
- Learn real-world lessons that could be applied AF-Wide
- Deploy Beta Software in Production Environment
- Direct Access to Development Team
- Bug Resolution
- Server Down Support

# Windows 2000 Pro Rollout

## Hardware

| Brand | Model | BIOS | Memory | Video | Hard Disk | NIC | Other |
|---|---|---|---|---|---|---|---|
| Compaq | Deskpro EP/SB Series PII 300/66 | Phoenix ROM 99.04.02, BIOS 686T1(?), 9830-B2T2-D566 | 64MB | ATI Technologies Inc. 3D RAGE IIC AGP | 3.2GB | Intel 21041 Based PCI | LS-120 100MB Floppy Disk Drive |
| Dell | Dimension XPS R450 | Phoenix ROM BIOS 4S4EBOX1.10 A.0019.P09 (A09) | 128MB | ATI Technologies Inc. 3D RAGE PRO AGP 2X | 2.0GB | 3C905C | PCMCIA, IDE CDROM |
| Gateway | G6-200 Pro 200 | AMIBIOS 1.00.11.CS1T | 64MB | Matrox Graphics Millenium PCI | 3.1GB | 3C905-TX | |
| Micron | ClientPro XVI, Pro 200 | AMIBIOS 1.00.07.CS15 | 64MB | S3 Virge | 4GB | PCI SMC CE 8432, dated 1995 | PCMCIA, IDE CDROM |
| Zenith | Z-Station GT Pro | AMIBIOS 1.00.06.CS1 | 64MB | ATI Technologies PCI Mach64 | 2.2GB 3.2GB | PCI SMC CE 8432, dated 1995 | PCMCIA, IDE CDROM |

# SSG Test Methodology – RTM

- Conducted in Lab
  - used individual AIS's test plans
  - Developer & functional present for testing
- Tested using various scenarios
  - Clean W2K load, upgrade from Win 95, upgrade from Win 98, upgrade from NT 4.0
  - each AIS removed at completion
- Testing Documentation
  - individual test plans were turned in for each AIS

# SW Application Testing Results RTM

| AIS | W2K | W95 Upgrade | W98 Upgrade | NT |
|---|---|---|---|---|
| Upgrade | G | G | G | G |
| • SCTS-CBT | G | G | G | G |
| • AFDT-CBT | G | G | G | G |
| • CALM | G | G | G | G |
| • MIS | In Progress | In Progress | In Progress | In Progress |
| • AFORMS | G | G | G | G |
| • FitSoft | G | G | G | Y |
| • Firefighter | R | R | R | R |
| • AFTERPS | G * | G * | G * | G * |
| • SMAS | | | | |

* Minor display anomaly observed – corrected

# SW Application Testing Results RTM

| AIS Upgrade | W2K | W95 Upgrade | W98 Upgrade | NT |
|---|---|---|---|---|
| • BARS | G | G | G | G |
| • AFDIR | G | G | G | G |
| • LOGMOD | G | G | G | G |
| • SFMIS | In Progress | In Progress | In Progress | In Progress |
| • EVMS | G | G | G | G |
| • JLIM | G | G | G | G |
| • InfoConnect | G | Y * | Y * | G |
| • IPMS | G | G | G | G |
| • BEMIS | G | G | G | G |

* Passed after de-installing/reinstalling – retesting with vendor support

# SW Application Testing Results RTM

| AIS | W2K | W95 Upgrade | W98 Upgrade | NT |
|---|---|---|---|---|
| Upgrade | G | G | G | G |
| • RIMS | Y | Y | Y | Y |
| • SBSS | In Analysis | In Analysis | In Analysis | In Analysis |
| • MicroBAS | Scheduled | Scheduled | Scheduled | Scheduled |
| • WICU-R | Scheduled | Scheduled | Scheduled | Scheduled |
| • WMS | G | G | G | G |
| • CDS | | | | |

# COTS Software Testing Results (SSG)

**For Information Only – SSG will not warrant the compatibility of COTS products with W2K**

| Product | Results |
|---|---|
| • PVCS | G |
| • Office 97/Office 2000 | G |
| • Oracle Developer 2.0 | G |
| • Powerbuilder 5.0 | G |
| • JAVA Developer Kit 1.2.1 | G |
| • Formflow | G * |
| • Remedy | G |
| • Visual Studio | G |
| • InstallShield 5.5 | Y |

* Minor display anomaly

# COTS Software Testing Results (SSG)

**For Information Only – SSG will not warrant the compatibility of COTS products with W2K**

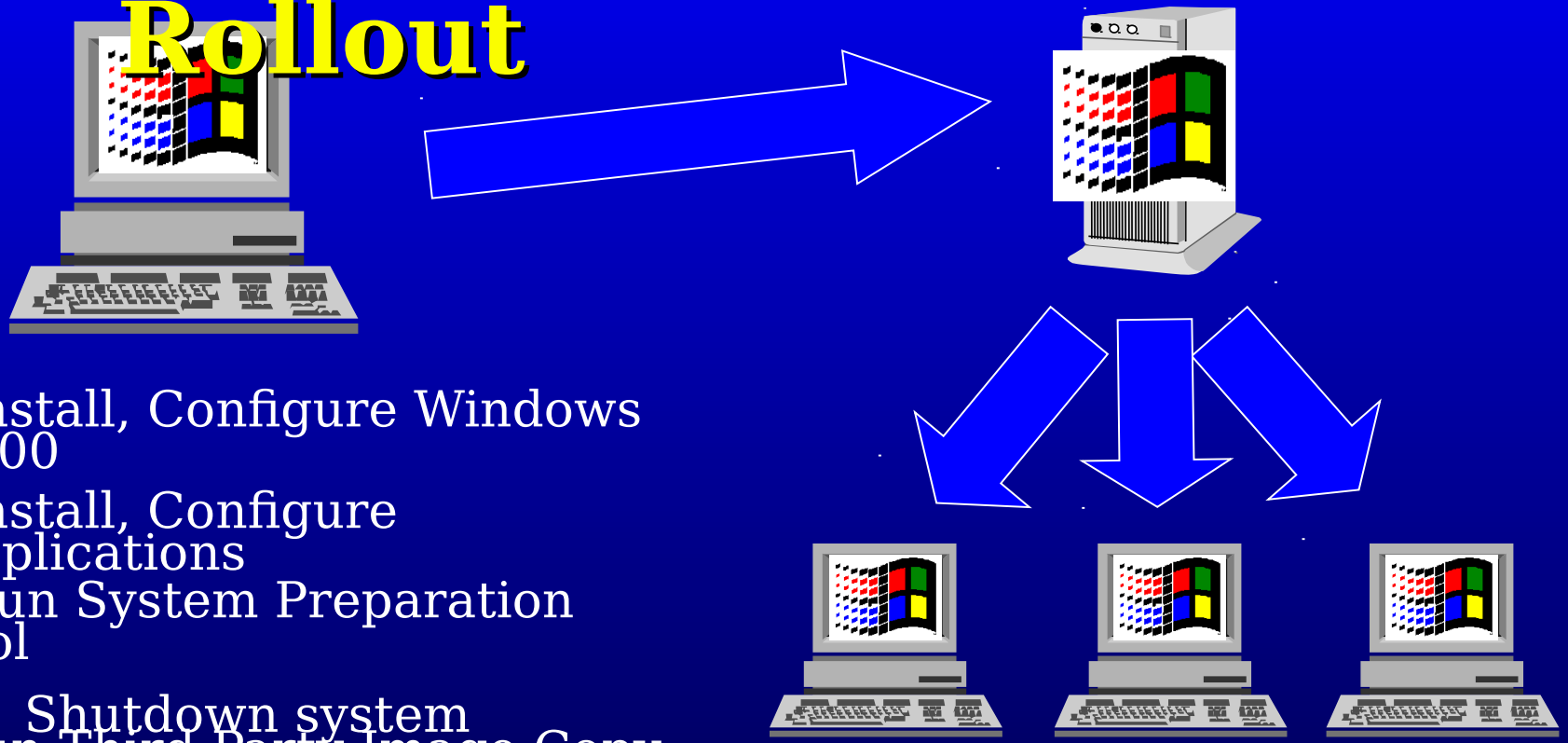
| Product | Results |
|---|---|
| • Outlook 98 | G |
| • Outlook 2000 | G |
| • DMS Client 2.1 | R |
| • Oracle RE | G |
| • DOORS | In Progress |
| • Norton AV 5.0 | Y * |
| • Norton AV 6.0 | G |

*** seems to work, but vendor won't support on W2K**

# Future Steps

- **Test Against RTM – in progress**
- **Incorporate W2K Testing into Release Testing Methodology**
- **Certify SSG-supported desktop applications as *Windows 2000 Ready* NLT 17 Feb 00**
- **Certify SSG-supported server applications as *Windows 2000 Ready* NLT 1 Apr 00**

# Windows 2000 Pro Rollout

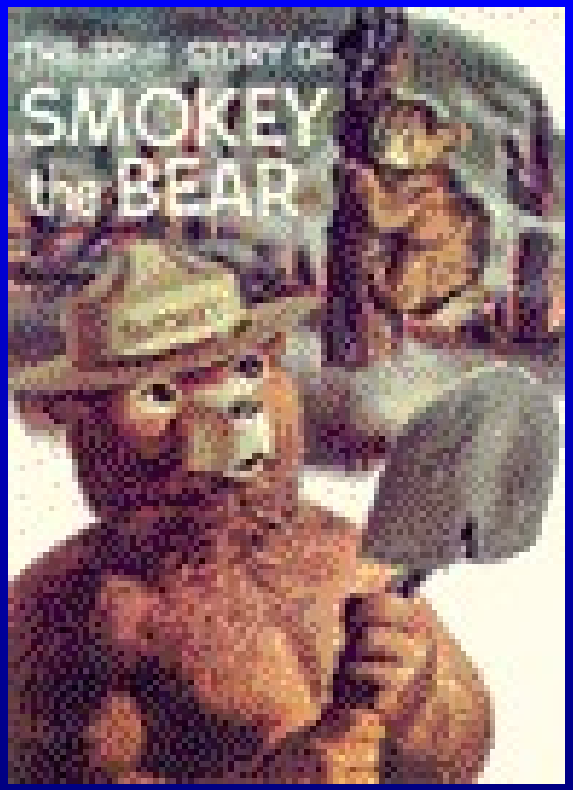


1. Install, Configure Windows 2000
2. Install, Configure Applications
3. Run System Preparation tool
   - Shutdown system
4. Run Third Party Image Copy tool
   - Examples: PowerQuest DriveImage, Symantec Ghost, (SSG uses ImageCast)…
   - Copy Image to Server, CD, etc.
   - Copy Image to target PCs using CD, multicast, or network share
5. On first boot complete configuration
   - Regenerate SID (Security Identifier)
   - Auto Create options: ComputerName, UserName, CompanyName, Admin

# Windows 2000 Rollout

## Lessons Learned

- Dedicated Team to Plan and Deploy Windows 2000
- Ensure Systems Have Latest BIOS Installed
- Don’t Upgrade Compressed Drives
- Run “winnt32.exe /checkupgradeonly”, HCL & SCL
- NT 4.0 SP 4 Upgrade to Windows 2000 Very Reliable
- Win 9.x Upgrade to Windows 2000 with Minor Issues
- Bit Copy Sysprep Method Software Investment




# Smokey Says…
# “Prevent Forest Fires - Plan Your Migration to Windows 2000”

**AF Win2K web site:  web3.ssg.gunter.af.m**